

EPIPHYSEAL SEPARATION OF THE GREAT TROCHANTER, WITH REPORT OF A CASE.¹

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EPIPHYSEAL separation of the great trochanter is of such rare occurrence, and at the same time seems to be so dangerous and serious an injury, that the contribution of every case is well worthy of consideration. Therefore the recording of the following case observed by the author seems amply justified:

Miss K., of Union Grove, Wis., aged 11, states that one afternoon in February, 1904, while leaving school, she was violently thrown down on the floor by a school-mate, who pushed unexpectedly from behind. During her fall she struck heavily upon her left hip. Although she felt considerable pain in the region of her left trochanter after the accident, she was able to limp home, a distance of about one mile. The following morning she was unable to arise from her bed, as every attempt to step on the left leg caused her great pain originating in the region of the left trochanter major and extending down to the knee. The physician who was called, made the diagnosis of contusion of the hip joint, and advised rest in bed for several days. Four weeks after the accident I saw the case in consultation with Dr. McCracken, of Union Grove, when the patient presented the following status:

The girl while lying in bed could move her affected leg in all directions without discomfort. Upon pressure, however, on the region of the great trochanter of her left leg, she experienced considerable pain. Passive motion of the leg did not reveal any abnormalities in the hip joint. When I asked the patient to get up and use her leg she was unable to do so, stating that it was impossible to step on the leg on account of pain originating in the region of the great trochanter, and extending to the inner side of

¹ Demonstrated before the Surgical Section of the American Medical Association, 1905.

her knee. While standing she was always inclined to rotate the leg inward and to hold it in a slightly flexed position as shown in figure 1. Not being able to reach any definite diagnosis I advised the taking of a Röntgenogram. This, as shown on plate No. 2, demonstrates that the patient was suffering from an incomplete separation of the epiphysis of the great trochanter. A small piece of bone seems to have been torn off from the lower portion of the trochanter.

A well-padded plaster bandage was then applied, with slight pressure on the trochanter. After absolute rest in bed for six weeks the bandage was removed, and active and passive motion begun cautiously and slowly. Complete recovery followed.

From a clinical standpoint epiphyseal separation of the great trochanter, usually occurring between the ages of 7-17 years, must be divided into two classes. First, those in which a complete separation of the epiphysis, including the periosteum and tendinous parts attached to the great trochanter, has taken place. This class seems to be most dangerous and oftentimes fatal. Second, those in which the great trochanter is separated from the body and neck of the bone, but no tearing of the periosteum and the tendinous portions has taken place. The author's case belongs to the second class.

The cause of the separation in our case was, as cited in most cases, direct violence to the trochanter by the fall upon the hip. Separation of the trochanter produced by traction of the muscles attached to the trochanter seems to be possible, but there is no certain case on record belonging to this class. Broca, in an article entitled "*Mécanisme des décollements épiphysaires*" (*Presse médicale*, Paris, March 4, 1905), coming to speak of the epiphyseal separations of the upper femur, says: "Pour les deux trochanters, l'arrachement musculaire est parfaitement possible, mais je n'en connais pas d'exemple."

On the great trochanter are inserted among other muscles the powerful gluteus medius and minimus muscles. The action of these muscles produced the pain in our patient by tearing



FIG. 1.—Epiphyseal separation of great trochanter. Op. Feb. 1901.



FIG. 2.—Lateral view two months after injury. (Note—The spots are plate defects.)

on the loosened trochanter during every attempt to step on the leg. Had there been forcible and excessive either active or passive motion immediately following the accident, these muscles would probably have succeeded in tearing off the trochanter entirely, thereby transforming the incomplete into a complete separation, and endangering the life of the patient.

John Poland (London), to whose excellent work on "Traumatic Separation of the Epiphyses," London, 1898, I owe most of my information and literature on the subject, could only collect 12 cases of epiphyseal separation of the great trochanter up to 1898. He cites, page 671, that from these 12 cases only 2, in which the condition was diagnosed during life, recovered. Of 6 cases 5 died from rapidly-developing suppuration and pyemia a few days following the accident. Death from other injuries resulted in 3 out of 12 cases.

The question naturally arises: Why is it that this injury is so fatal, and what are the reasons that at this place so much oftener suppurative processes take place after an epiphyseal separation than on other epiphyses of the body? In regard to this question, I would like to quote the opinion of Hamilton (*vide* Poland: "Traumatic Separation of the Epiphyses," p. 672), who says: "The cases reported would seem to show that in epiphyseal separation of this process there is a peculiar tendency to the formation of pus and of general pyemic infection, which may perhaps find its explanation in the great vascularity of the bony structure at this point, and in the fact that the lesion of this spongy tissue especially exposes the patient to the absorption of the septic materials."

To this Poland adds that "This cancellous tissue forming the base of the trochanter, which is in reality an apophysis, is certainly of a lighter and more spongy character than that in contact with the true epiphyses of the long bones. A considerable area of such structure is involved in this injury."

Since the review and collection of literature on this subject up to 1898 by Poland, I am unable to find another case cited.

In regard to diagnosis and treatment of epiphyseal separa-

tion of the great trochanter, it is not my intention here to dwell at length upon this subject, suffice it to again call the attention of the reader to the essay of this subject by Poland, in his work, "Traumatic Separation of the Epiphyses." For the purpose of completeness however, I may be allowed to give the following brief summary:

Diagnosis.—The differential diagnosis between contusion of the trochanter major and epiphyseal separation without displacement of the trochanter is almost impossible because of the insignificance of local symptoms, but let us bear in mind that in every case of direct violence against the trochanter, such as fall on the hip or severe blow on the trochanter, in young people from the seventh to the eighteenth year, the possibility of separation of the great trochanter must be taken into consideration. When we find at the same time pain by pressure on the region of the trochanter and inability of the patient to use the limb because of pain in the region of the hip joint extending down to the knee during attempts to walk, while at the same time active and passive motion in the hip joint is possible to all directions, the possibility of a separation of the great trochanter is still more probable. In such cases the physician should not be satisfied with the diagnosis of contusion of the hip joint, but an immediate skiagram should be taken to clear the diagnosis.

Even in case of complete separation of the trochanter with displacement, it is oftentimes impossible to feel the detached trochanter, displaced backwards, and upwards, on account of the accompanying swelling. The only definite means of a positive diagnosis even for those cases is a Röntgen Ray picture.

Treatment.—In every case in which there is any suspicion of epiphyseal separation of the great trochanter, absolute rest in bed is imperative, and in examining such cases for diagnosis the patient should be handled with the utmost care, especially avoiding forcible active and passive motions, which by the friction of the separated portions may produce suppuration and transform an incomplete into a complete separation.

When an incomplete separation has been diagnosed by the Roentgen Ray, a carefully applied plaster-of-paris cast, well padded with cotton, should be adjusted, enclosing the entire leg as well as the pelvis. The patient must stay in bed with this plaster cast six to eight weeks.

In cases of complete separation, I would not be inclined to conservative inoperative treatment on account of the great difficulty of keeping the trochanter in place, but would advise immediate operation and suturing of the great trochanter to its place. In case inflammation and suppuration sets in, the trochanter should be immediately removed and the parts incised freely for the purpose of establishing free drainage.